

WEST Search History

DATE: Wednesday, September 17, 2003

<u>Set Name</u> side by side	<u>Query</u>	<u>Hit Count</u>	<u>Set Name</u> result set
<i>DB=USPT,PGPB; PLUR=YES; OP=ADJ</i>			
L7	L4 and seed	50	L7
L6	L4 and solute	75	L6
L5	L4 and stress	44	L5
L4	L3 and plant	121	L4
L3	L2 and transgenic	123	L3
L2	L1 and (tonoplast or vacuol\$)	167	L2
L1	ppase or pyrophosphatase	1179	L1

END OF SEARCH HISTORY

Connecting via Winsock to STN

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* * * * * Welcome to STN International * * * * *

NEWS	1		Web Page URLs for STN Seminar Schedule - N. America
NEWS	2		"Ask CAS" for self-help around the clock
NEWS	3	Feb 24	PCTGEN now available on STN
NEWS	4	Feb 24	TEMA now available on STN
NEWS	5	Feb 26	NTIS now allows simultaneous left and right truncation
NEWS	6	Feb 26	PCTFULL now contains images
NEWS	7	Mar 04	SDI PACKAGE for monthly delivery of multifile SDI results
NEWS	8	Mar 24	PATDPAFULL now available on STN
NEWS	9	Mar 24	Additional information for trade-named substances without structures available in REGISTRY
NEWS	10	Apr 11	Display formats in DGENE enhanced
NEWS	11	Apr 14	MEDLINE Reload
NEWS	12	Apr 17	Polymer searching in REGISTRY enhanced
NEWS	13	SEP 09	CA/CAPLUS records now contain indexing from 1907 to the present
NEWS	14	Apr 21	New current-awareness alert (SDI) frequency in WPIDS/WPINDEX/WPIX
NEWS	15	Apr 28	RDISCLOSURE now available on STN
NEWS	16	May 05	Pharmacokinetic information and systematic chemical names added to PHAR
NEWS	17	May 15	MEDLINE file segment of TOXCENTER reloaded
NEWS	18	May 15	Supporter information for ENCOMPAT and ENCOMPLIT updated
NEWS	19	May 19	Simultaneous left and right truncation added to WSCA
NEWS	20	May 19	RAPRA enhanced with new search field, simultaneous left and right truncation
NEWS	21	Jun 06	Simultaneous left and right truncation added to CBNB
NEWS	22	Jun 06	PASCAL enhanced with additional data
NEWS	23	Jun 20	2003 edition of the FSTA Thesaurus is now available
NEWS	24	Jun 25	HSDB has been reloaded
NEWS	25	Jul 16	Data from 1960-1976 added to RDISCLOSURE
NEWS	26	Jul 21	Identification of STN records implemented
NEWS	27	Jul 21	Polymer class term count added to REGISTRY
NEWS	28	Jul 22	INPADOC: Basic index (/BI) enhanced; Simultaneous Left and Right Truncation available
NEWS	29	AUG 05	New pricing for EUROPATFULL and PCTFULL effective August 1, 2003
NEWS	30	AUG 13	Field Availability (/FA) field enhanced in BEILSTEIN
NEWS	31	AUG 15	PATDPAFULL: one FREE connect hour, per account, in September 2003
NEWS	32	AUG 15	PCTGEN: one FREE connect hour, per account, in September 2003
NEWS	33	AUG 15	RDISCLOSURE: one FREE connect hour, per account, in September 2003
NEWS	34	AUG 15	TEMA: one FREE connect hour, per account, in September 2003
NEWS	35	AUG 18	Data available for download as a PDF in RDISCLOSURE
NEWS	36	AUG 18	Simultaneous left and right truncation added to PASCAL
NEWS	37	AUG 18	FROSTI and KOSMET enhanced with Simultaneous Left and Right

Truncation

NEWS 38 AUG 18 Simultaneous left and right truncation added to ANABSTR

NEWS EXPRESS April 4 CURRENT WINDOWS VERSION IS V6.01a, CURRENT
MACINTOSH VERSION IS V6.0b(ENG) AND V6.0Jb(JP),
AND CURRENT DISCOVER FILE IS DATED 01 APRIL 2003
NEWS HOURS STN Operating Hours Plus Help Desk Availability
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NEWS PHONE Direct Dial and Telecommunication Network Access to STN
NEWS WWW CAS World Wide Web Site (general information)

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* * * * * STN Columbus * * * * *

FILE 'HOME' ENTERED AT 11:14:46 ON 17 SEP 2003

=> file agricola caplus biosis		
COST IN U.S. DOLLARS	SINCE FILE	TOTAL
	ENTRY	SESSION
FULL ESTIMATED COST	0.21	0.21

FILE 'AGRICOLA' ENTERED AT 11:14:58 ON 17 SEP 2003

FILE 'CAPLUS' ENTERED AT 11:14:58 ON 17 SEP 2003
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FILE 'BIOSIS' ENTERED AT 11:14:58 ON 17 SEP 2003
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=> s (ppase or pyrophosphatase) and plant
L1 803 (PPASE OR PYROPHOSPHATASE) AND PLANT

=> del l1 y

=> s (ppase or pyrophosphatase) and plant?
L1 1212 (PPASE OR PYROPHOSPHATASE) AND PLANT?

=> s l1 and tonoplast
L2 336 L1 AND TONOPLAST

=> del l2 y

=> s l1 and (tonoplast or vacuole)
L2 443 L1 AND (TONOPLAST OR VACUOLE)

=> s l2 and transgenic
L3 12 L2 AND TRANSGENIC

=> dup rem l3
PROCESSING COMPLETED FOR L3
L4 7 DUP REM L3 (5 DUPLICATES REMOVED)

=> d 1-7 ti

L4 ANSWER 1 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN
 TI Enhanced meristematic activity and competence by overexpression of **tonoplast pyrophosphatase**

L4 ANSWER 2 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN
 TI Stress-resistant oversized **transgenic plants** capable of growing in salinized soil

L4 ANSWER 3 OF 7 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003) on STN DUPLICATE 1
 TI Drought- and salt-tolerant **plants** result from overexpression of the AVP1 H⁺-pump.

L4 ANSWER 4 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN
 TI Production of male sterile **plant** by using pollen-specific promoter

L4 ANSWER 5 OF 7 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
 TI Identification and characterization of a novel vacuolar compartment in Nicotiana tabacum.

L4 ANSWER 6 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 2
 TI The role of sugar accumulation in leaf frost hardiness - investigations with **transgenic** tobacco expressing a bacterial **pyrophosphatase** or a yeast invertase gene

L4 ANSWER 7 OF 7 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003) on STN DUPLICATE 3
 TI Light-stimulated proton transport into the vacuoles of leaf mesophyll cells does not require energization by the **tonoplast pyrophosphatase**.

=> d ab

L4 ANSWER 1 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A **transgenic plant** having increased meristematic activity and competence effectuating in larger leave, stem, flower, fruit and root structures comprising a polynucleotide sequence causing upregulated expression of vacuolar **pyrophosphatase**. Thus, **transgenic** Arabadopsis thaliana **plants** transformed with the genes AVP1 encoding for vacuolar **pyrophosphatase** and NHX1 encoding a H⁺-ATPase demonstrated enhanced resistance to saline stress.

=> d so

L4 ANSWER 1 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN
 SO PCT Int. Appl., 76 pp.
 CODEN: PIXXD2

=> d pi

L4	ANSWER 1 OF 7	CAPLUS	COPYRIGHT 2003	ACS on STN	
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	WO 2002015674	A1	20020228	WO 2001-US9548	20010324
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,				

CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
 HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
 LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
 SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN,
 YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
 WO 2001033945 A1 20010517 WO 2000-US30955 20001110
 WO 2001033945 C1 20020725
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
 CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
 HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
 LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
 SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN,
 YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
 AU 2001050974 A5 20020304 AU 2001-50974 20010324
 EP 1315410 A1 20030604 EP 2001-924311 20010324
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 US 2002023282 A1 20020221 US 2001-934088 20010820
 WO 2002016558 A1 20020228 WO 2001-US41806 20010820
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
 CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
 RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US,
 UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 AU 2001085459 A5 20020304 AU 2001-85459 20010820
 EP 1315795 A1 20030604 EP 2001-964622 20010820
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR

=> d in

L4 ANSWER 1 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN
 IN Gaxiola, Roberto A.

=> d 2 ab

L4 ANSWER 2 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A stress resistant, oversized, **transgenic plant**
 capable of growing in salinized media comprising a polynucleotide sequence
 causing upregulated express of vacuolar **pyrophosphatase**.
 Further disclosed, is the seed produced by such **transgenic**
plants which comprises such polynucleotide sequence, and progeny
plants grown from such seed. Thus, tomato **plants**,
 transformed with the genes AVP-1 which encodes for an inorg.
pyrophosphatase and NHX-1 which encodes for a sodium transporter,
 demonstrated higher intracellular cation concns. when grown in saline
 soils.

=> d 2 pi

L4 ANSWER 2 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001033945	A1	20010517	WO 2000-US30955	20001110
	WO 2001033945	C1	20020725		
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
	BR 2000015636	A	20020709	BR 2000-15636	20001110
	EP 1231831	A1	20020821	EP 2000-980337	20001110
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			
	JP 2003516727	T2	20030520	JP 2001-535966	20001110
	WO 2002015674	A1	20020228	WO 2001-US9548	20010324
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
	AU 2001050974	A5	20020304	AU 2001-50974	20010324
	EP 1315410	A1	20030604	EP 2001-924311	20010324
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			
	US 2002178464	A1	20021128	US 2001-834998	20010413
	US 2002023282	A1	20020221	US 2001-934088	20010820
	WO 2002016558	A1	20020228	WO 2001-US41806	20010820
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
	AU 2001085459	A5	20020304	AU 2001-85459	20010820
	EP 1315795	A1	20030604	EP 2001-964622	20010820
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			

=> d 2 in

L4 ANSWER 2 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN
IN Gaiola, Roberto A.

=> d 3 ab

L4 ANSWER 3 OF 7 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2003) on STN DUPLICATE 1
AB **Transgenic plants** overexpressing the vacuolar H(+)-**pyrophosphatase** are much more resistant to high concentrations of

NaCl and to water deprivation than the isogenic wild-type strains. These **transgenic plants** accumulate more Na(+) and K(+) in their leaf tissue than the wild type. Moreover, direct measurements on isolated vacuolar membrane vesicles derived from the AVP1 **transgenic plants** and from wild type demonstrate that the vesicles from the **transgenic plants** have enhanced cation uptake. The phenotypes of the AVP1 **transgenic plants** suggest that increasing the vacuolar proton gradient results in increased solute accumulation and water retention. Presumably, sequestration of cations in the **vacuole** reduces their toxic effects. Genetically engineered drought- and salt-tolerant **plants** could provide an avenue to the reclamation of farmlands lost to agriculture because of salinity and a lack of rainfall.

=> d 3 so

- L4 ANSWER 3 OF 7 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2003) on STN DUPLICATE 1
- S0 Proceedings of the National Academy of Sciences of the United States of America, Sept 25, 2001. Vol. 98, No. 20. p. 11444-11449
Publisher: Washington, D.C. : National Academy of Sciences,
CODEN: PNASA6; ISSN: 0027-8424

=> d 4 ab

- L4 ANSWER 4 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN
- AB A review. Development of genetically modified **plants** is crit. for stable food supply in future. However, spread of the artificially created phenotype out to ecosystem through the pollen of the **plant** is a major concern. Therefore, rendering male sterility to the pollen is another important objective in developing the genetically modified **plants**. The authors had identified a promoter segment of the gene encoding **vacuole inorg. pyrophosphatase** (V-PPase) gene of *Arabidopsis thaliana* that could activate the gene in a pollen-specific manner. Upon introduction of the V-PPase gene antisense oligonucleotide attached with the promoter segment to the **plant**, 3-5 % of the next generation became remarkably sterile without developing fruits and 10-20 % became significantly reduced fertility although they had fruit development. The authors concluded the pollen specific promoter segment would be a very useful tool applicable to various **plant** genes if the copy no. of the transgene could be increased. In addn. to choosing better target cells of diploid than the haploid pollen cells for increasing copy no., use of RNA interference technol. was described as an alternative to the antisense technol. to improve the repression efficiency.

=> d 4 so

- L4 ANSWER 4 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN
- S0 Bio Industry (2001), 18(5), 43-51
CODEN: BIINEG; ISSN: 0910-6545

=> d 4 au

- L4 ANSWER 4 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN
- AU Sato, Masahiko; Mitsuda, Noritaka

=> d 5 ab

L4 ANSWER 5 OF 7 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN

=> d 5 so

L4 ANSWER 5 OF 7 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
SO Molecular Biology of the Cell, (Nov., 1999) Vol. 10, No. SUPPL., pp. 111a.
Meeting Info.: 39th Annual Meeting of the American Society for Cell
Biology Washington, D.C., USA December 11-15, 1999 The American Society
for Cell Biology
. ISSN: 1059-1524.

=> d 6 ab

L4 ANSWER 6 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 2
AB In order to assess the contribution of increased leaf osmolality to
plant frost hardiness, **transgenic** tobacco (*Nicotiana*
tabacum) **plants** that accumulate sol. carbohydrates were used.
The leaves from **plants** of the clone U-pps-1-10 expressing a
bacterial **pyrophosphatase** gene displayed an increase in frost
hardiness of 1.2.degree. when compared with wild type control
plants. Most strikingly, these **plants** showed a higher
capacity to increase their hardiness during exposure to 4.degree. growth
temp. for 10 to 14 days; frost hardiness increased by 1.1.degree. in
transgenic plants as compared with 0.2.degree. in wild
type controls. Of the other three independent clones transformed with the
pyrophosphatase gene, none showed a statistically significant
increase in hardiness compared with wild type **plants**, or
increased hardiness after cold acclimation. There was no correlation
between leaf osmolality and hardiness when leaves from cold acclimated and
from non-acclimated wild type and all clones of transformed tobacco were
compared. Tobacco **plants** expressing an apoplastic yeast
invertase gene were more susceptible to freeze-thaw stress than wild type
controls, in spite of increased leaf osmolality due to sugar accumulation
in the leaf cells. Cold acclimation of such **plants** resulted in
increased frost hardiness, which, however, did not exceed the hardiness of
untransformed controls. When the expressed invertase gene contained a
signal sequence for targeting the protein to the **vacuole** only
moderate increases in leaf osmolality were obtained. None of the three
independent clones investigated showed improved frost hardiness compared
with the wild type.

=> d 6 so

L4 ANSWER 6 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 2
SO Journal of Plant Physiology (1996), 147(5), 604-10
CODEN: JPPHEY; ISSN: 0176-1617

=> d 7 ab

L4 ANSWER 7 OF 7 AGRICOLA Compiled and distributed by the National
Agricultural Library of the Department of Agriculture of the United States
of America. It contains copyrighted materials. All rights reserved.
(2003) on STN DUPLICATE 3
AB Photosynthetic characteristics of **transgenic** tobacco (*Nicotiana*
tabacum L.) **plants** with a soluble **pyrophosphatase** in
the cytosol of their leaf cells were compared to those of wild-type
plants. Although the development of the **transgenic**
plants was somewhat retarded compared to the wild type, as shown

by stunted growth and delayed flowering, photosynthetic responses were comparable in **transgenic** and wild-type leaves of similar physiological age. In particular, light-dependent proton transport into the vacuoles of leaf mesophyll cells was not decreased in leaves of the **transgenic plants**, which did not contain pyrophosphate in the cytosol owing to the presence of a soluble pyrophosphatase. This shows that light-stimulated proton pumping did not require the pumping activity of the **tonoplast pyrophosphatase**. Apparently, light-stimulated proton pumping can be based solely on the activity of the **tonoplast ATPase**.

=> s l2 and (gene or cdna or coding region)

L5 64 L2 AND (GENE OR CDNA OR CODING REGION)

=> dup rem l5

PROCESSING COMPLETED FOR L5

L6 42 DUP REM L5 (22 DUPLICATES REMOVED)

=> d 1-10 ti

L6 ANSWER 1 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN

TI **cdna** cloning of 12 subunits of the V-type ATPase from Mesembryanthemum crystallinum and their expression under stress

L6 ANSWER 2 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN

TI Enhanced meristematic activity and competence by overexpression of **tonoplast pyrophosphatase**

L6 ANSWER 3 OF 42 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN

TI Functional expression of Acetabularia acetabulum vacuolar H⁺-**pyrophosphatase** in a yeast VMA3-deficient strain.

L6 ANSWER 4 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 1

TI Isolation and characterization of six peach cDNAs encoding key proteins in organic acid metabolism and solute accumulation: involvement in regulating peach fruit acidity

L6 ANSWER 5 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN

TI QTLs and genes controlling peach fruit quality

L6 ANSWER 6 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN

TI Candidate genes and QTLs for sugar and organic acid content in peach [Prunus persica (L.) Batsch]

L6 ANSWER 7 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN

TI Vacuolar type H⁺ pumping pyrophosphatases of parasitic protozoa

L6 ANSWER 8 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN

TI Stress-resistant oversized transgenic **plants** capable of growing in salinized soil

L6 ANSWER 9 OF 42 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003) on STN DUPLICATE 2

TI Drought- and salt-tolerant **plants** result from overexpression of the AVP1 H⁺-pump.

L6 ANSWER 10 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN

TI Significance of the V-type ATPase for the adaptation to stressful growth conditions and its regulation on the molecular and biochemical level

=> d 4 ab

L6 ANSWER 4 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 1

AB As in many other fleshy fruits, the predominant org. acids in ripe peach (*Prunus persica* (L.) Batsch) fruit are malic and citric acids. The accumulation of these metabolites in fruit flesh is regulated during fruit development. Six peach fruit-related genes implicated in org. acid metab. (mitochondrial citrate synthase; cytosolic NAD-dependent malate dehydrogenase, and cytosolic NADP-dependent isocitrate dehydrogenase) and storage (vacuolar proton translocating pumps: one vacuolar H⁺-ATPase, and two vacuolar H⁺-pyrophosphatases) were cloned. Five of these peach genes were homologous to genes isolated from fruit in other fleshy fruit species. Phylogenetic and expression analyses suggested the existence of a particular vacuolar **pyrophosphatase** highly expressed in fruit. The sixth **gene** was the first cytosolic NAD-dependent malate dehydrogenase **gene** isolated from fruit. **Gene** expression was studied during the fruit development of two peach cultivars, a normal-acid (Fantasia) and a low-acid (Jalousia) cultivar. The overall expression patterns of the org. acid-related genes appeared strikingly similar for the two cultivars. The genes involved in org. acid metab. showed a stronger expression in ripening fruit than during the earlier phases of development, but their expression patterns were not necessarily correlated with the changes in org. acid contents. The **tonoplast** proton pumps showed a biphasic expression pattern more consistent with the patterns of org. acid accumulation, and the **tonoplast** pyrophosphatases were more highly expressed in the fruit of the low-acid cultivar during the second rapid growth phase of the fruit.

=> d 4 so

L6 ANSWER 4 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 1

SO Physiologia Plantarum (2002), 114(2), 259-270
CODEN: PHPLAI; ISSN: 0031-9317

=> d 7 ab

L6 ANSWER 7 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN

AB A review. Trans-membrane proton pumping is responsible for a myriad of physiol. processes including the generation of proton motive force that drives bioenergetics. Among the various proton pumping enzymes, vacuolar pyrophosphatases (V-PPases) form a distinct class of proton pumps, which are characterized by their ability to translocate protons across a membrane by using the potential energy released by hydrolysis of the phosphoanhydride bond of inorg. pyrophosphate. Until recently, V-PPases were known to be the purview of only **plant** vacuoles and plasma membranes of phototrophic bacteria. Recent discoveries of V-PPases in kinetoplastid and apicomplexan parasites, however, have expanded our view of the evolutionary reach of these enzymes. The lack of V-PPases in the vertebrate hosts of these parasites makes them potentially excellent targets for developing broad-spectrum antiparasitic agents. This review surveys the current understanding of V-PPases in parasitic protozoa with an emphasis on malaria parasites. Topol. predictions suggest remarkable similarity of the parasite enzymes to their **plant** homologs with 15-16 membrane spanning domains and conserved sequences shown to constitute crit. catalytic residues. Remarkably, malaria parasites have been shown to possess two V-PPase genes, one is an apparent orthologue of the canonical **plant** enzyme, whereas the other is a more distantly related paralogue with homol. to a recently identified new class of K⁺-insensitive **plant** V-PPases. V-PPases appear to localize both to the plasma membrane and cytoplasmic organelles believed to be acidocalcisomes or polyphosphate bodies. **Gene** transfer

expts. suggest that one of the malarial V-PPases is predominantly localized to the surface of intraerythrocytic parasites. We suggest a model in which V-PPase localized to the malaria parasite plasma membrane may serve as an electrogenic pump utilizing pyrophosphate as an energy source, thus sparing the more precious ATP. Searching for V-PPase inhibitors could prove fruitful as a novel means of antiparasitic chemotherapy.

=> d 7 so

L6 ANSWER 7 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
S0 International Journal for Parasitology (2002), 32(1), 1-14
CODEN: IJPYBT; ISSN: 0020-7519

=> d 11-20 ti

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(2003) on STN DUPLICATE 3

TI Decrease in vacuolar pH during petunia flower opening is reflected in the
activity of **tonoplast** H⁺-ATPase.

L6 ANSWER 12 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
TI Production of male sterile **plant** by using pollen-specific
promoter

L6 ANSWER 13 OF 42 AGRICOLA Compiled and distributed by the National
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of America. It contains copyrighted materials. All rights reserved.
(2003) on STN DUPLICATE 4

TI Isolation and characterization of a Na⁺/H⁺ antiporter **gene** from
the halophyte *Atriplex gmelini*.

L6 ANSWER 14 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
TI AVP2, a sequence-divergent, K⁺-insensitive H⁺-translocating inorganic
pyrophosphatase from *Arabidopsis*

L6 ANSWER 15 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
TI Aspects of grape berry development bioenergetics

L6 ANSWER 16 OF 42 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
TI **Gene** regulation of vacuolar proton **pyrophosphatase**:
Identification of pollen-specific regulatory region.

L6 ANSWER 17 OF 42 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
TI AVP2 from *Arabidopsis* defines a new category of vacuolar-type H⁺-
PPase.

L6 ANSWER 18 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
TI Vacuolar H⁺-**pyrophosphatase**

L6 ANSWER 19 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 5
TI Seasonal changes in the activities of vacuolar H⁺-pumps and their
gene expression in the developing Japanese pear fruit

L6 ANSWER 20 OF 42 AGRICOLA Compiled and distributed by the National
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(2003) on STN

TI The *Arabidopsis thaliana* proton transporters, AtNhx1 and Avp1, can
function in cation detoxification in yeast.

=> d 14 ab

L6 ANSWER 14 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN

AB **Plant** vacuolar H⁺-translocating inorg. pyrophosphatases (V-PPases; E.C. 3.6.1.1) have been considered to constitute a family of functionally and structurally monotonous intrinsic membrane proteins. Typified by AVP1 from Arabidopsis, all characterized **plant** V-PPases share greater than 84% sequence identity and catalyze K⁺-stimulated H⁺ translocation. Here we describe the mol. and biochem. characterization of AVP2 (accession no. AF182813), a sequence-divergent (36% identical) K⁺-insensitive, Ca²⁺-hypersensitive V-**PPase** active in both inorg. pyrophosphate hydrolysis and H⁺ translocation. The differences between AVP2 and AVP1 provide the first indication that **plant** V-PPases from the same organism fall into two distinct categories. Phylogenetic analyses of these and other V-**PPase** sequences extend this principle by showing that AVP2, rather than being an isoform of AVP1, is but one representative of a novel category of AVP2-like (type II) V-PPases that coexist with AVP1-like (type I) V-PPases not only in **plants**, but also in apicomplexan protists such as the malarial parasite Plasmodium falciparum.

=> d 16 ag

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L6 ANSWER 16 OF 42 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN

=> d 16 so

L6 ANSWER 16 OF 42 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN

SO Plant Biology (Rockville), (2000) Vol. 2000, pp. 187. print.
Meeting Info.: Annual Meeting of the American Society of Plant Physiologists San Diego, California, USA July 15-19, 2000 American Society of Plant Physiologists (ASPP)

=> d 17 ab

L6 ANSWER 17 OF 42 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN

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L6 ANSWER 17 OF 42 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN

SO Plant Biology (Rockville), (2000) Vol. 2000, pp. 152. print.
Meeting Info.: Annual Meeting of the American Society of Plant Physiologists San Diego, California, USA July 15-19, 2000 American Society of Plant Physiologists (ASPP)

=> d 18 ab

L6 ANSWER 18 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
AB A review with 104 refs. The H⁺-translocating inorg.
pyrophosphatase (H⁺-**PPase**) is a unique, electrogenic
proton pump distributed among most land **plants**, but only some
algae, protozoa, bacteria, and archaebacteria. This enzyme is a fine
model for research on the coupling mechanism between the pyrophosphate
hydrolysis and the active proton transport, since the enzyme consists of a
single polypeptide with a calcd. mol. mass of 71-80 kDa and its substrate
is also simple. Cloning of the H⁺-**PPase** genes from several
organisms has revealed the conserved regions that may be the catalytic
site and/or participate in the enzymic function. The primary sequences
are reviewed with ref. to biochem. properties of the enzyme, such as the
requirement of Mg²⁺ and K⁺. In **plant** cells, H⁺-**PPase**
coexists with H⁺-ATPase in a single vacuolar membrane. The physiol.
significance and the regulation of the **gene** expression of H⁺-
PPase are also reviewed.

=> d 18 so

L6 ANSWER 18 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
S0 Biochimica et Biophysica Acta (2000), 1465(1-2), 37-51
CODEN: BBACAQ; ISSN: 0006-3002

=> d 21-30 ti

L6 ANSWER 21 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
TI Properties and molecular cloning of Ca²⁺/H⁺ antiporter in the vacuolar
membrane of mung bean

L6 ANSWER 22 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
TI Molecular cloning and sequencing of the **cDNA** for vacuolar H⁺-
pyrophosphatase from Chara corallina

L6 ANSWER 23 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 6
TI A vacuolar H⁺-**pyrophosphatase** in Acetabularia acetabulum:
molecular cloning and comparison with higher **plants** and a
bacterium

L6 ANSWER 24 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 7
TI Genes involved in osmoregulation during turgor-driven cell expansion of
developing cotton fibers are differentially regulated

L6 ANSWER 25 OF 42 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
TI Structural studies of the vacuolar H⁺-**pyrophosphatase**: Sequence
analysis and identification of the residues modified by fluorescent
cyclohexylcarbodiimide and maleimide.

L6 ANSWER 26 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 8
TI Molecular cloning of vacuolar H⁺-**pyrophosphatase** and its
developmental expression in growing hypocotyl of mung bean

L6 ANSWER 27 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 9
TI Pyrophosphate as an energy donor in the cytosol of **plant** cells.
An enigmatic alternative to ATP

L6 ANSWER 28 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 10
TI The AtVAM3 encodes a syntaxin-related molecule implicated in the vacuolar
assembly in Arabidopsis thaliana

L6 ANSWER 29 OF 42 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
TI Effects of several hormones on expression of vacuolar H+-
pyrophosphatase and H+-ATPase from barley roots.

L6 ANSWER 30 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
TI Isolation and characterization of cDNAs encoding vacuolar H+-
pyrophosphatase isoforms from rice (*Oryza sativa* L.)

=> d 30 ab

L6 ANSWER 30 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
AB The vacuolar H+-**pyrophosphatase** (V-PPase) is an electrogenic H+ pump, which was found in the **plant** vacuolar membrane. Two **cDNA** clones (OVP1 and OVP2) encoding the V-PPase were isolated from cultured rice (*Oryza sativa*) cells and subsequently sequenced. Sequence anal. revealed that OVP1 contains 2316 nucleotides of open reading frame (ORF) and 362 nucleotides of 3'-untranslated region, whereas OVP2 comprises 2304 nucleotides of ORF and 312 nucleotides of 3'-untranslated region. The nucleotide sequences of ORF of OVP1 and OVP2 are 80.7% identical, and their 5'- and 3'-untranslated regions have 39.4 and 48.4% identity, resp. The polypeptides encoded by the ORF of OVP1 and OVP2 contain 771 and 767 amino acids, resp., and the sequences of the OVP proteins are very similar to those of other V-PPases, which are shown to have 85-91% homol. Chromosomal mapping by RFLP techniques demonstrates that OVP1 and OVP2 are isoforms encoded by different genes. Both OVP1 and OVP2 are mapped on the same chromosome (chromosome 6) to a distance of .apprx.90 cM. Northern anal. indicates that the OVP1 and OVP2 are also expressed in intact rice **plants** and OVP2 shows higher expression in calli than roots and shoots, compared to OVP1. These results show that .gtoreq.2 genes encoding the V-PPases are present in rice genome and their expressions are probably regulated in a different manner.

=> d 30 so

L6 ANSWER 30 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
SO Plant Molecular Biology (1996), 31(5), 1029-1038
CODEN: PMBIDB; ISSN: 0167-4412

=> d 31-42 ti

L6 ANSWER 31 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 11
TI The role of sugar accumulation in leaf frost hardiness - investigations with transgenic tobacco expressing a bacterial **pyrophosphatase** or a yeast invertase **gene**

L6 ANSWER 32 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
TI Site-directed mutagenesis of vacuolar H+-**pyrophosphatase**.
Necessity of Cys634 for inhibition by maleimides but not catalysis

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(2003) on STN DUPLICATE 12

TI Molecular cloning, characterization and expression analysis of isoforms
encoding **tonoplast**-bound proton-translocating inorganic
pyrophosphatase in tobacco.

L6 ANSWER 34 OF 42 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
TI Nucleotide sequences of **cDNA** clones encoding the two vacuolar

proton pumps from maize.

- L6 ANSWER 35 OF 42 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003) on STN DUPLICATE 13
- TI Heterologous expression of **plant** vacuolar **pyrophosphatase** in yeast demonstrates sufficiency of the substrate-binding subunit for proton transport.
- L6 ANSWER 36 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 14
- TI Factors affecting the re-formation of vacuoles in evacuated protoplasts and the expression of the two vacuolar proton pumps
- L6 ANSWER 37 OF 42 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003) on STN DUPLICATE 15
- TI Isolation and characterization of cDNAs encoding the vacuolar H⁺-**pyrophosphatase** of *Beta vulgaris*.
- L6 ANSWER 38 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
- TI The H⁺-pumping inorganic **pyrophosphatase** of the vacuolar membrane of higher **plants**
- L6 ANSWER 39 OF 42 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
- TI Properties of the proton pumping **pyrophosphatase** in **tonoplast** vesicles of *Acer pseudoplatanus*: Functional molecular mass and polypeptide composition.
- L6 ANSWER 40 OF 42 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003) on STN DUPLICATE 16
- TI Molecular cloning and sequence of **cDNA** encoding the pyrophosphate-energized vacuolar membrane proton pump of *Arabidopsis thaliana*.
- L6 ANSWER 41 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
- TI The **plant vacuole**
- L6 ANSWER 42 OF 42 CAPLUS COPYRIGHT 2003 ACS on STN
- TI Cloning and characterization of an inorganic **pyrophosphatase gene** from *Arabidopsis thaliana*

=> d 33 ab

- L6 ANSWER 33 OF 42 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003) on STN DUPLICATE 12
- AB The **tonoplast**-bound proton-translocating inorganic **pyrophosphatase** (V-type **PPase**) and the proton ATPase (V-type ATPase) are electrogenic proton pumps guaranteeing the energization of solute transport across the **tonoplast**. Using an *Arabidopsis thaliana* PCR **cDNA** fragment corresponding to clone ATAVP3 we have isolated 24 **cDNA** clones encoding **tonoplast**-bound inorganic **pyrophosphatase** of tobacco. Based on restriction analysis the **cDNA** clones could be grouped into three different classes. The complete nucleotide sequence of one member of each class (TVP5, TVP9 and TVP31) was determined. The **cDNA** clones contain an uninterrupted open reading frame of 2292 bp (TVP5), 2295 bp (TVP9) and 2298 bp (TVP31) coding for polypeptides of 764,

765 and 766 amino acids, respectively. The nucleotide sequence of the different clones is highly homologous within the **coding region** (79-89% identity) but differs strongly in the untranslated regions. The individual classes are encoded by single- or low-copy genes as judged from genomic gel blot experiments using 3'-specific probes. RNA analysis revealed that the accumulation of the specific transcripts is differentially regulated during leaf development.

=> d 33 so

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SO Plant molecular biology, Nov 1995. Vol. 29, No. 4. p. 833-840
Publisher: Dordrecht : Kluwer Academic Publishers.
CODEN: PMBIDB; ISSN: 0167-4412

=> dis his

(FILE 'HOME' ENTERED AT 11:14:46 ON 17 SEP 2003)

FILE 'AGRICOLA, CAPLUS, BIOSIS' ENTERED AT 11:14:58 ON 17 SEP 2003

L1 1212 S (PPASE OR PYROPHOSPHATASE) AND PLANT?
L2 443 S L1 AND (TONOPLAST OR VACUOLE)
L3 12 S L2 AND TRANSGENIC
L4 7 DUP REM L3 (5 DUPLICATES REMOVED)
L5 64 S L2 AND (GENE OR CDNA OR CODING REGION)
L6 42 DUP REM L5 (22 DUPLICATES REMOVED)

=> s 12 and seed

L7 14 L2 AND SEED

=> dup rem 17

PROCESSING COMPLETED FOR L7

L8 11 DUP REM L7 (3 DUPLICATES REMOVED)

=> d 1-11 ti

L8 ANSWER 1 OF 11 CAPLUS COPYRIGHT 2003 ACS on STN
TI Stress-resistant oversized transgenic **plants** capable of growing in salinized soil

L8 ANSWER 2 OF 11 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
TI Effects of colchicine on the accumulation of vacuolar H+**pyrophosphatase** and H+-ATPase in germinating *Acacia mangium* seeds and the recovery effects by sucrose, indole butyric acid and 6-benzyladenine.

L8 ANSWER 3 OF 11 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
TI The protein storage **vacuole**: A unique compound organelle.

L8 ANSWER 4 OF 11 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
TI **Tonoplast** intrinsic protein isoforms as markers for vacuolar functions.

L8 ANSWER 5 OF 11 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
TI Reversibility of H+-ATPase and H+**pyrophosphatase** in **tonoplast** vesicles from maize coleoptiles and seeds.

L8 ANSWER 6 OF 11 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
TI Synthesis of PPi and ATP in **tonoplast** vesicles of maize

coleoptiles and seeds.

- L8 ANSWER 7 OF 11 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003) on STN DUPLICATE 1
- TI Vacuolar H(+)-translocating **pyrophosphatase** is induced by anoxia or chilling in seedlings of rice.
- L8 ANSWER 8 OF 11 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
- TI Protein storage vacuoles form de novo during pea cotyledon development.
- L8 ANSWER 9 OF 11 CAPLUS COPYRIGHT 2003 ACS on STN
- TI Purified vacuolar inorganic **pyrophosphatase** consisting of a 75-kDa polypeptide can pump H⁺ into reconstituted proteoliposomes
- L8 ANSWER 10 OF 11 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003) on STN DUPLICATE 2
- TI Accumulation of vacuolar H⁺-**pyrophosphatase** and H⁺-ATPase during reformation of the central **vacuole** in germinating pumpkin seeds.
- L8 ANSWER 11 OF 11 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
- TI In vivo treatments that modulate PP-i-dependent proton transport activity of **tonoplast**-enriched membrane vesicles from barley roots.

=> d 7 ab

- L8 ANSWER 7 OF 11 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003) on STN DUPLICATE 1
- AB The present study was undertaken to determine whether vacuolar H⁺-**pyrophosphatase** (V-PPase) might replace vacuolar H⁺-ATPase under energy stress due to anoxia or chilling in anoxia-tolerant species such as rice (*Oryza sativa* L.) and corn (*Zea mays* L.). The relative transcript level of V-PPase in rice seedlings, like that of alcohol dehydrogenase 1, increased greatly under anoxia and declined again when the seedlings were returned to air. However, the distribution of transcripts in root, shoot, and **seed** differed somewhat from that of alcohol dehydrogenase 1. Immunoreactive V-PPase protein and V-PPase enzyme specific activity in a **tonoplast** fraction from rice seedlings increased progressively with time of anoxia or chilling at 10 degrees C, showing a 75-fold increase after 6 d of anoxia, compared with a 2-fold increase of vacuolar H⁺-ATPase activity. When the seedlings were returned to air, the specific activity returned to its initial level within 2 d. After 6 d of chilling at 10 degrees C, V-PPase specific activity reached a level 20-fold of that at 25 degrees C. In microsomes of corn roots, V-PPase specific activity did not respond to anoxia but was constitutively high. It is proposed that V-PPase can be an important element in the survival strategies of **plants** under hypoxic or chilling stress.

=> d 7 so

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- SO Plant physiology, June 1995. Vol. 108, No. 2. p. 641-649

Publisher: Rockville, MD : American Society of Plant Physiologists, 1926-
CODEN: PLPHAY; ISSN: 0032-0889